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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/807,025	Applicant(s) REHMAN ET AL.	
	Examiner Callie E. Shosho	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/22/04 & 3/21/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9, 19, and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9, 19, and 29 each recite “TRIS buffer”. The scope of the claims is confusing in light of the use of the abbreviation “TRIS”. In order to avoid confusion in the scope of the claims, it is advised that “TRIS” is replaced with the actual chemical name.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-5, 9-10, 21-25, and 29-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. (U.S. 2005/0027035) taken in view of the evidence given in Batolome (U.S. 5,929,876) and Belmont et al. (U.S. 5,571,311).

Wang et al. disclose system for printing images on a substrate comprising ink jet ink and ink jet printer wherein the ink comprises 0.1-20% styrene-maleic anhydride copolymer possessing weight average molecular weight of 500-50,000, 0.001-10% self-dispersing pigment possessing average particle diameter of 0.005-1 μm , 0.01-50% co-solvent, 0.01-1% sodium benzoate, 0.1-5% surfactant, and TRIS buffer. For specific types of self-dispersing pigments, Wang et al. refers to Belmont et al. which discloses carbon black having attached organic group substituted with ionizable group which is acidic group (col.5, lines 4-6, 11-20, and 38-40). Applicants attention is drawn to Black Ink #1 of Wang et al. that discloses ink comprising sodium benzoate, TRIS buffer, 1,5-pentanediol, 2-pyrrolidone, 2-methyl-1,3-propanediol, styrene-maleic anhydride copolymer, and self-dispersing pigment (paragraphs 1, 12-13, 17-20, 24-25, 27, 31-32, 41-42, 45, and 50-51). Although there is no explicit disclosure of printhead loaded with the ink as presently claimed, it is well known, as evidenced by Bartolome, that ink jet printers inherently possess printhead which is loaded with the ink (col.1, lines 18-25).

In light of the above, it is clear that Wang et al. anticipate the present claims.

5. Claims 1 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagasawa et al. (U.S. 5,846,307) taken in view of the evidence given in Batolome (U.S. 5,929,876).

Nagasawa et al. disclose system for printing images on a substrate comprising ink jet ink and ink jet printer wherein the ink comprises 25 parts 20% pigment dispersion wherein the

pigment possesses acid functionalities, 5 parts styrene-maleic anhydride copolymer possessing weight average molecular weight of 1600, solvent, and water. Thus, it is calculated that the ink comprises 4.5% pigment, 5% styrene-maleic anhydride copolymer, 10% solvent, and 57.5% water (comparative example 7). Although there is no explicit disclosure of printhead loaded with the ink as presently claimed, it is well known, as evidenced by Bartolome, that ink jet printers inherently possess printhead which is loaded with the ink (col.1, lines 18-25).

In light of the above, it is clear that Nagasawa et al. anticipate the present claims.

6. Claims 1-3 and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyabayashi et al. (U.S. 2002/0107303) taken in view of the evidence given in Batolome (U.S. 5,929,876).

Miyabayashi et al. disclose system for printing images on a substrate comprising ink jet ink and ink jet printer wherein the ink comprises 0.1-25% surface treated pigment possessing average particle diameter of 20-80 nm, 1-50% styrene maleic anhydride possessing weight average molecular weight of 3,000-30,000, 0.1-40% solvent such as 2-pyrrolidone, and 0.1-5% surfactant. It is disclosed that the surface treated pigment is acid functionalized (paragraphs 4, 44, 47, 55, 70, 74, 76, 78-80, and 98). Although there is no explicit disclosure of printhead loaded with the ink as presently claimed, it is well known, as evidenced by Bartolome, that ink jet printers inherently possess printhead which is loaded with the ink (col.1, lines 18-25).

In light of the above, it is clear that Miyabayashi et al. anticipate the present claims.

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7. Claims 1-4 and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Yui et al. (U.S. 5,948,155).

Yui et al. disclose system for printing images on a substrate comprising ink jet ink and ink jet printer comprising printhead loaded with ink wherein the ink comprises 0.1-25% acid functionalized pigment possessing average particle diameter of 10-150 nm, 0.1-50% dispersant possessing average molecular weight of 1,000-10,000, 3-50% solvent including 1,5-pentanediol, ammonium, potassium, sodium, or lithium salt, and surfactant. Attention is drawn to example 1 that discloses ink comprising pigment, 1.5% styrene-potassium maleate anhydride copolymer possessing molecular weight of 2,000, organic solvent, 0.05% surfactant, and water (col.1, lines 6-8, col.5, lines 15, 18, and 30-34, col.6, lines 46-55 and 59-64, col.7, lines 1-42, col. 37-40, and example 1).

In light of the above, it is clear that Yui et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 4-5 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi et al. (U.S. 2002/0107303) in view of Osumi et al. (U.S. 6,280,513).

The disclosure with respect to Miyabayashi et al. in paragraph 6 above is incorporated here by reference.

The difference between Miyabayashi et al. and the present claimed invention is the requirement in the claims of ammonium benzoate.

Osumi et al., which is drawn to ink jet ink, disclose the use ammonium benzoate in order to produce waterfast image that possesses good re-ejection characteristics from the printer (col.9, lines 60-67).

In light of the motivation for using ammonium benzoate disclosed by Osumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use

ammonium benzoate in the ink of Miyabayashi et al. in order to produce waterfast ink that possesses good re-ejection characteristics from the printer, and thereby arrive at the claimed invention.

11. Claims 5 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (U.S. 5,948,155) in view of Osumi et al. (U.S. 6,280,513).

The disclosure with respect to Yui et al. in paragraph 7 above is incorporated here by reference.

The difference between Yui et al. and the present claimed invention is the requirement in the claims of ammonium benzoate.

Osumi et al., which is drawn to ink jet ink, disclose the use ammonium benzoate in order to produce waterfast image that possesses good re-ejection characteristics from the printer (col.9, lines 60-67).

In light of the motivation for using ammonium benzoate disclosed by Osumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use ammonium benzoate in the ink of Yui et al. in order to produce waterfast ink that possesses good re-ejection characteristics from the printer, and thereby arrive at the claimed invention.

12. Claims 6 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (U.S. 5,948,155) in view of Yatake et al. (U.S. 2003/0196569).

The disclosure with respect to Yui et al. in paragraph 7 above is incorporated here by reference.

The difference between Yui et al. and the present claimed invention is the requirement in the claims of acid precursor used to make the acid functionalized pigment.

Yatake et al., which is drawn to ink jet ink, disclose the use of acid functionalized pigment formed from p-aminobenzoic acid precursor in order to produce ink with excellent ejection stability, only slight foaming, and increased print density (paragraphs 79-82).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to make the acid functionalized pigment of Yui et al. from p-aminobenzoic acid precursor, and thereby arrive at the claimed invention.

13. Claims 7-8 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi et al. (U.S. 2002/0107303) or Yui et al. either of which in view of Suzuki et al. (U.S. 6,874,881).

The disclosures with respect to Miyabayashi et al. and Yui et al. in paragraphs 6 and 7 above are incorporated here by reference.

The difference between Miyabayashi et al. or Yui et al. and the present claimed invention is the requirement in the claims of printhead configured for specific firing frequency and drop volume.

Suzuki et al. disclose ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher (col.10, lines 31-37) in order to produce high quality image printing at high speed (col.10, lines 31-37).

In light of the motivation for using printer configured for specific firing frequency and drop volume disclosed by Suzuki et al. as described above, it therefore would have been obvious

to one of ordinary skill in the art to use such printer in the system of Miyabayashi et al. or Yui et al. in order to produce ink that produce high quality image printing at high speed, and thereby arrive at the claimed invention.

14. Claims 11-13 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi et al. (U.S. 2002/0107303) in view of Suzuki et al. (U.S. 6,874,881) and Batolome (U.S. 5,929,876).

Miyabayashi et al. method of ink jet printing wherein ink is printed onto substrate wherein the ink comprises 0.1-25% surface treated pigment possessing average particle diameter of 20-80 nm, 1-50% styrene maleic anhydride possessing weight average molecular weight of 3,000-30,000, 0.1-40% solvent such as 2-pyrrolidone, and 0.1-5% surfactant. It is disclosed that the surface treated pigment is acid functionalized (paragraphs 4, 44, 47, 55, 70, 74, 76, 78-80, and 98). Although there is no explicit disclosure of printhead loaded with the ink as presently claimed, it is well known, as disclosed by Bartolome, that ink jet printers intrinsically possess printhead which is loaded with the ink (col.1, lines 18-25).

The difference between Miyabayashi et al. and the present claimed invention is the requirement in the claims of the firing frequency and drop velocity of the printer.

Suzuki et al. disclose ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher (col.10, lines 31-37) in order to produce high quality image printing at high speed (col.10, lines 31-37).

In light of the motivation for using printer configured for specific firing frequency and drop volume disclosed by Suzuki et al. as described above, it therefore would have been obvious

to one of ordinary skill in the art to use such printer in Miyabayashi et al. in order to produce high quality image printing at high speed, and thereby arrive at the claimed invention.

15. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi et al. in view of Suzuki et al. and Batolome as applied to claims 11-13 and 17-18 above, and further in view of Osumi et al. (U.S. 6,280,513).

The difference between Miyabayashi et al. in view of Suzuki et al. and Batolome and the present claimed invention is the requirement in the claims of ammonium benzoate.

Osumi et al., which is drawn to ink jet ink, disclose the use ammonium benzoate in order to produce waterfast image that possesses good re-ejection characteristics from the printer (col.9, lines 60-67).

In light of the motivation for using ammonium benzoate disclosed by Osumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use ammonium benzoate in the ink of Miyabayashi et al. in order to produce waterfast ink that possesses good re-ejection characteristics from the printer, and thereby arrive at the claimed invention.

16. Claims 11-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (U.S. 5,948,155) in view of Suzuki et al. (U.S. 6,874,881).

Yui et al. disclose method of ink jet printing wherein ink is printed onto substrate wherein the ink comprises 0.1-25% acid functionalized pigment possessing average particle diameter of 10-150 nm, 0.1-50% dispersant possessing average molecular weight of 1,000-10,000, 3-50%

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solvent including 1,5-pentanediol, ammonium, potassium, sodium, or lithium salt, and surfactant. Attention is drawn to example 1 that discloses ink comprising pigment, 1.5% styrene-potassium maleate anhydride copolymer possessing molecular weight of 2,000, organic solvent, 0.05% surfactant, and water (col.1, lines 6-8, col.5, lines 15, 18, and 30-34, col.6, lines 46-55 and 59-64, col.7, lines 1-42, col. 37-40, and example 1).

The difference between Yui et al. and the present claimed invention is the requirement in the claims of the firing frequency and drop velocity of the printer.

Suzuki et al. disclose ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher (col.10, lines 31-37) in order to produce high quality image printing at high speed (col.10, lines 31-37).

In light of the motivation for using printer configured for specific firing frequency and drop volume disclosed by Suzuki et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such printer in Yui et al. in order to produce high quality image printing at high speed, and thereby arrive at the claimed invention.

17. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. in view of Suzuki et al. as applied to claims 11-14 and 17-18 above, and further in view of Osumi et al. (U.S. 6,280,513).

The difference between Yui et al. in view of Suzuki et al. and the present claimed invention is the requirement in the claims of ammonium benzoate.

Osumi et al., which is drawn to ink jet ink, disclose the use ammonium benzoate in order to produce waterfast image that possesses good re-ejection characteristics from the printer (col.9, lines 60-67).

In light of the motivation for using ammonium benzoate disclosed by Osumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use ammonium benzoate in the ink of Yui et al. in order to produce waterfast ink that possesses good re-ejection characteristics from the printer, and thereby arrive at the claimed invention.

18. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. in view of Suzuki et al. as applied to claims 11-14 and 17-18 above, and further in view of Yatake et al. (U.S. 2003/0196569).

The difference between Yui et al. in view of Suzuki et al. and the present claimed invention is the requirement in the claims of acid precursor used to make the acid functionalized pigment.

Yatake et al., which is drawn to ink jet ink, disclose the use of acid functionalized pigment formed from p-aminobenzoic acid precursor in order to produce ink with excellent ejection stability, only slight foaming, and increased print density (paragraphs 79-82).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to make the acid functionalized pigment of Yui et al. form p-aminobenzoic acid precursor, and thereby arrive at the claimed invention.

19. Claims 1-3, 6, 21-23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (U.S. 5,889,083) in view of Yatake et al. (U.S. 2003/0196569) and Batolome (U.S. 5,929,876).

Zhu discloses disclose system for printing images on a substrate comprising ink jet ink and ink jet printer loaded with the ink wherein the ink comprises 0.1-10% pigment, 2-20% styrene-maleic anhydride copolymer possessing weight average molecular weight of 5,600, 7,700, or 10,300, 0.1-10% organic solvent, and 0.01-5% surfactant (col.1, lines 5-9, col.3, lines 16-23 and 26-27, col.4, lines 39-46, col.5, line 57-col.6, line 9, col.6, lines 31-39, col.8, line 66-col.9, line 6, and col.10, lines 31-51). Although there is no explicit disclosure of printhead loaded with the ink as presently claimed, it is well known, as disclosed by Bartolome, that ink jet printers intrinsically possess printhead which is loaded with the ink (col.1, lines 18-25).

The difference between Zhu and the present claimed invention is the requirement in the claims of specific type of pigment.

Yatake et al., which is drawn to ink jet ink, disclose the use of acid functionalized pigment formed from p-aminobenzoic acid precursor wherein the pigment possesses mean particle size of 10-200 nm in order to produce ink with excellent ejection stability, only slight foaming, and increased print density (paragraphs 79-82).

In light of the motivation for using specific pigment disclosed by Yatake et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Zhu in order to produce ink excellent ejection stability, only slight foaming, and increased print density, and thereby arrive at the claimed invention.

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20. Claims 4-5 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of Yatake et al. and Batolome as applied to claims 1-3, 6, 21-23, and 26 above, and further in view of Osumi et al. (U.S. 6,280,513).

The difference between Zhu in view of Yatake et al. and Batolome and the present claimed invention is the requirement in the claims of ammonium benzoate.

Osumi et al., which is drawn to ink jet ink, disclose the use ammonium benzoate in order to produce waterfast image that possesses good re-ejection characteristics from the printer (col.9, lines 60-67).

In light of the motivation for using ammonium benzoate disclosed by Osumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use ammonium benzoate in the ink of Zhu in order to produce waterfast ink that possesses good re-ejection characteristics from the printer, and thereby arrive at the claimed invention.

21. Claims 7-8 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of Yatake et al. and Bartolome as applied to claims 1-3, 6, 21-23, and 26 above, and further in view of Suzuki et al. (U.S. 6,874,881).

The difference between Zhu in view of Yatake et al. and Batolome and the present claimed invention is the requirement in the claims of printhead configured for specific firing frequency and drop volume.

Suzuki et al. disclose ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher (col.10, lines 31-37) in order to produce high quality image printing at high speed (col.10, lines 31-37).

In light of the motivation for using printer configured for specific firing frequency and drop volume disclosed by Suzuki et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such printer in the system of Zhu in order to produce ink that produces high quality image printing at high speed, and thereby arrive at the claimed invention.

22. Claims 11-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (U.S. 5,889,083) in view of Yatake et al. (U.S. 2003/0196569), Suzuki et al. (U.S. 6,874,881) and Batolome (U.S. 5,929,876).

Zhu discloses method of ink jet printing wherein ink is printed onto substrate wherein the ink comprises 0.1-10% pigment, 2-20% styrene maleic anhydride possessing weight average molecular weight of 5,600, 7,700, or 10,300, 0.1-10% organic solvent, and 0.01-5% surfactant (col.1, lines 5-9, col.3, lines 16-23 and 26-27, col.4, lines 39-46, col.5, line 57-col.6, line 9, col.6, lines 31-39, col.8, line 66-col.9, line 6, and col.10, lines 31-51). Although there is no explicit disclosure of printhead loaded with the ink as presently claimed, it is well known, as disclosed by Bartolome, that ink jet printers intrinsically possess printhead which is loaded with the ink (col.1, lines 18-25).

The difference between Zhu and the present claimed invention is the requirement in the claims of (a) specific pigment and (b) firing frequency and drop velocity of the printer.

With respect to difference (a), Yatake et al., which is drawn to ink jet ink, disclose the use of acid functionalized pigment formed from p-aminobenzoic acid precursor wherein the

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pigment possesses mean particle size of 10-200 nm in order to produce ink with excellent ejection stability, only slight foaming, and increased print density (paragraphs 79-82).

With respect to difference (b), Suzuki et al. disclose ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher (col.10, lines 31-37) in order to produce high quality image printing at high speed (col.10, lines 31-37).

In light of the motivation for using specific pigment disclosed by Yatake et al. as described above and for using printer configured for specific firing frequency and drop volume disclosed by Suzuki et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Zhu in order to produce ink excellent ejection stability, only slight foaming, and increased print density and to use such printer in Zhu in order to produce high quality image printing at high speed, and thereby arrive at the claimed invention.

23. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu in view of Yatake et al., Suzuki et al., and Batolome as applied to claims 11-13 and 16-18 above, and further in view of Osumi et al. (U.S. 6,280,513).

The difference between Zhu in view of Yatake et al., Suzuki et al., and Batolome and the present claimed invention is the requirement in the claims of ammonium benzoate.

Osumi et al., which is drawn to ink jet ink, disclose the use ammonium benzoate in order to produce waterfast image that possesses good re-ejection characteristics from the printer (col.9, lines 60-67).

In light of the motivation for using ammonium benzoate disclosed by Osumi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use ammonium benzoate in the ink of Zhu in order to produce waterfast ink that possesses good rejection characteristics from the printer, and thereby arrive at the claimed invention.

24. Claims 11-15 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (U.S. 2005/0027035) in view of Suzuki et al. (U.S. 6,874,881) and Batolome (U.S. 5,929,876).

Wang et al. disclose method of ink jet printing wherein ink is printed onto substrate wherein the ink comprises 0.1-20% styrene maleic anhydride copolymer possessing weight average molecular weight of 500-50,000, 0.001-10% self-dispersing pigment, 0.01-50% co-solvent, 0.01-1% sodium benzoate, 0.1-5% surfactant, and TRIS buffer. For specific types of self-dispersing pigments, Wang et al. refers to Belmont et al. which discloses carbon black having attached organic group substituted with ionizable group which is acidic group (col.5, lines 4-6, 11-20, and 38-40). Applicants attention is drawn to Black Ink #1 of Wang et al. that discloses ink comprising sodium benzoate, TRIS buffer, 1,5-pentanediol, 2-pyrrolidone, 2-methyl-1,3-propanediol, styrene maleic anhydride, and self-dispersing pigment (paragraphs 1, 12-13, 17-20, 24-25, 27, 31-32, 41-42, 45, and 50-51). Although there is no explicit disclosure of printhead loaded with the ink as presently claimed, it is well known, as disclosed by Bartolome, that ink jet printers intrinsically possess printhead which is loaded with the ink (col.1, lines 18-25).

The difference between Wang et al. and the present claimed invention is the requirement in the claims of the firing frequency and drop velocity of the printer.

Suzuki et al. disclose ink jet printer that ejects ink of 20 pL or less and that possesses firing frequency of 10 kHz or higher (col.10, lines 31-37) in order to produce high quality image printing at high speed (col.10, lines 31-37).

In light of the motivation for using printer configured for specific firing frequency and drop volume disclosed by Suzuki et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such printer in the system of Wang et al. in order to produce high quality image printing at high speed, and thereby arrive at the claimed invention.

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

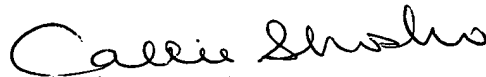
Tyrell (U.S. 2005/0190244) disclose system for printing images on substrate comprising ink and ink jet printer wherein the ink comprises liquid vehicle, acid-functionalized pigment, ammonium benzoate, and TRIS buffer, however, there is no disclosure of styrene maleic anhydride copolymer as presently claimed.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
2/17/06